

CLAIMS

What is claimed:

1. A mold gate for a tape substrate, comprising:
an aperture defined within a flexible dielectric film of the tape substrate; and
a support element carried partially by a surface of said flexible dielectric film and at least partially overlapping said aperture, said support element being substantially coplanar with conductive traces of the tape substrate.
2. The mold gate of claim 1, wherein said aperture is defined external of an outer boundary of a finished tape substrate.
3. The mold gate of claim 1, wherein said aperture includes sidewalls that are oriented substantially perpendicular to a plane of said flexible dielectric film.
4. The mold gate of claim 1, wherein said aperture includes sidewalls that are oriented at a nonperpendicular angle relative to a plane of said flexible dielectric film.
5. The mold gate of claim 1, wherein said aperture includes sidewalls that are lined with a material that reduces or prevents adhesion of packaging material to the mold gate.
6. The mold gate of claim 1, further comprising:
a plurality of channels in at least a section thereof.
7. The mold gate of claim 6, further comprising:
a diversion dam between at least two of said plurality of channels.

8. A tape substrate, comprising:
a flexible dielectric film including an aperture of a mold gate formed therein; and
a conductive layer on a single surface of said flexible dielectric film and comprising:
a plurality of conductive traces positioned within an outer boundary for a finished tape substrate; and
a support structure of said mold gate at least partially overlapping said aperture of said mold gate.
9. The tape substrate of claim 8, further comprising:
a lining on at least sidewalls of said aperture, said lining comprising a material that reduces or prevents adhesion of a packaging material to said mold gate.
10. The tape substrate of claim 8, wherein said aperture and said support structure are located external to an outer boundary for a finished tape substrate.
11. The tape substrate of claim 8, wherein said aperture includes sidewalls that are oriented substantially perpendicular to a plane of said flexible dielectric film.
12. The tape substrate of claim 8, wherein said aperture includes sidewalls that are oriented at a nonperpendicular angle relative to a plane of said flexible dielectric film.
13. The tape substrate of claim 8, wherein said mold gate comprises a plurality of channels in at least a section thereof.
14. The tape substrate of claim 13, wherein said mold gate further comprises a diversion dam between at least two of said plurality of channels.

15. A method for forming a mold gate of a tape substrate, comprising:
forming an aperture of the mold gate in a flexible dielectric film of the tape substrate; and
concurrently patterning conductive lines and a support structure of the mold gate from the same
conductive film.

16. The method of claim 15, further comprising:
securing said conductive film to said flexible dielectric film.

17. The method of claim 16, wherein said securing is effected before said forming.

18. The method of claim 17, wherein said forming comprises etching the flexible
dielectric film.

19. The method of claim 18, wherein said etching comprises at least one of wet
etching and dry etching the flexible dielectric film.

20. The method of claim 16, wherein said securing is effected following said forming.

21. The method of claim 20, wherein said forming comprises mechanically removing
material of the flexible dielectric film.

22. The method of claim 21, wherein said mechanically removing comprises die
cutting the flexible dielectric film.

23. The method of claim 15, wherein said concurrently patterning comprises:
forming a mask over said conductive film; and
removing material of said conductive film through apertures of said mask.

24. The method of claim 23, wherein said removing material comprises etching said
conductive film.

25. The method of claim 15, further comprising:
coating sidewalls of said aperture with a material that reduces or prevents adhesion of a
packaging material to the mold gate.
26. A method for fabricating a tape substrate, comprising:
providing a flexible dielectric film;
forming an aperture of a mold gate in said flexible dielectric film; and
substantially concurrently forming a support element of said mold gate and conductive traces
from a single conductive film laminated onto a surface of said flexible dielectric film.
27. The method of claim 26, wherein said providing said flexible dielectric film
comprises providing said flexible dielectric film with said single conductive film prelaminated
onto said surface thereof.
28. The method of claim 26, wherein said providing said flexible dielectric film
comprises providing said flexible dielectric film without said single conductive film on said
surface thereof.
29. The method of claim 28, further comprising:
laminating said single conductive film onto said surface of said flexible dielectric film.
30. The method of claim 29, wherein said laminating is effected following said
forming said aperture.
31. The method of claim 30, wherein said forming said aperture comprises
mechanically forming said aperture.
32. The method of claim 31, wherein said mechanically forming said aperture
comprises die cutting said flexible dielectric film.

33. The method of claim 26, wherein said forming said aperture comprises mechanically forming said aperture.

34. The method of claim 33, wherein said mechanically forming said aperture comprises die cutting said flexible dielectric film.

35. The method of claim 26, wherein said forming said aperture comprises: forming a mask on a surface of said flexible dielectric film; and removing material of said flexible dielectric film through apertures of said mask.

36. The method of claim 35 wherein said removing comprises etching said material of said flexible dielectric film.

37. The method of claim 36, wherein said etching comprises at least one of dry etching and wet etching said material of said flexible dielectric film.

38. The method of claim 26, wherein said forming said aperture is effected at a location which is external to an outer boundary of an area of said flexible dielectric film where a finished tape substrate is to be located.

39. The method of claim 26, wherein said substantially concurrently forming comprises: forming a mask over said single conductive film; and removing material of said single conductive film through apertures of said mask.

40. The method of claim 39, wherein said removing material comprises etching said single conductive film.

41. The method of claim 26, further comprising:
coating sidewalls of said aperture with a material that reduces or prevents adhesion of a
packaging material to said mold gate.
42. The method of claim 26, further comprising plating conductive structures of said
support element.
43. A semiconductor device packaging method, comprising:
providing a tape substrate including a flexible dielectric film with an aperture of a mold gate
formed therein and conductive traces and a support element of said mold gate on the
same surface of said flexible dielectric film;
securing a semiconductor die to a surface of said tape substrate to form a semiconductor device
assembly; and
electrically connecting bond pads of said semiconductor die to corresponding contacts of said
tape substrate.
44. The method of claim 43, wherein said providing comprises providing a strip
including a plurality of tape substrates.
45. The method of claim 43, further comprising:
introducing said semiconductor device assembly into a cavity of a mold with said mold gate in
alignment with a runner that communicates with said cavity.
46. The method of claim 45, further comprising:
introducing a liquid packaging material into said cavity through said runner and said mold gate.
47. The method of claim 46, further comprising:
permitting said liquid packaging material to substantially cure or substantially harden.

48. The method of claim 47, further comprising removing said mold gate and a sprue of substantially cured or substantially hardened packaging material within said mold gate.

49. A system for degating a packaged semiconductor device that includes a tape substrate, the system comprising:
a first element positionable adjacent to a first major surface of the packaged semiconductor device and including a receptacle for receiving a portion of a gate of the packaged semiconductor device; and
a second element positionable adjacent to a second major surface of the packaged semiconductor device and including a degating element alignable with said gate and extendable therethrough to force said portion of said gate into said receptacle of said first element.

50. The system of claim 49, wherein said first element and said second element are configured to receive and index a strip including a plurality of packaged semiconductor devices therebetween.